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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,516	12/04/2000	Jeong-Jin Kim	3430-149P	5548

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EXAMINER

ALANKO, ANITA KAREN

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/727,516

Applicant(s)

KIM ET AL.

Examiner

Anita K Alanko

Art Unit

1765

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE 2/22/05.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/21/05 has been entered.

Claim Rejections - 35 USC § 112

Claims 4-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terms "lower portion" and "upper portion" of the vessel render the metes and bounds of the claim unclear. Neither the prior art nor the specification provide a clear and distinct definition for "lower portion" and "upper portion"- and these terms could have various definitions, for example, a small region near the lower opening and the upper opening, at those parts of the vessels that have slanted sides (as seen in the figure) but not the middle portion, or the vessel equally divided midway to form the upper and lower portion- therefore, the metes and bounds of the claims are unclear.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yates (US 6,350,322 B1) and Sadamori (JP 03-296218 A).

Yates discloses a method comprising:

etching the objects by providing etching solution into the vessel (see col.11, lines 19-21);

forcing out the etching solution from the vessel by providing pressurized gas into the vessel (col.11 line 22, the “purging step”);

cleaning the objects by providing cleaning solution into the vessel (col.11, lines 29-30 the “removing” step) and

draining the cleaning solution from the vessel (col.10, lines 1-9).

Yates discloses to introduce an etching solution to a lower portion of the vessel (“F” entering arrow in Figure 5); introducing pressurized gas to an upper portion of the vessel (“52” in Figure 5) to force etching solution out through the lower portion of the vessel (“F” exiting arrow in Figure 5), introducing cleaning solution into the lower portion of the vessel (“F” entering arrow in Figure 5).

Yates does not disclose draining cleaning solution from the upper portion of the vessel, rather it is drained from the bottom portion (“F” exiting arrow in Figure 5).

Sadamori teaches that for an overflow cleaning apparatus, that it is useful to drain cleaning solution 2 from the upper portion 5 of the vessel (Fig.2) rather than using overflow type draining through (Fig.3) in order to prevent stagnation of waste water at the aperture of the cleaning vessel and contamination (see abstract). It would have been obvious to drain the cleaning solution from the upper portion of the vessel because Sadamori teaches that this is

useful in order to prevent stagnation of the cleaning solution at the aperture of the cleaning vessel and contamination.

As to claim 5, Yates does not disclose using different draining pipes. However, apparatus limitations are given little weight in method claims. Apparatus limitations, unless they affect the process in a manipulative sense, may have little weight in process claims. *In re Tarczy-Hornoch* 158 USPQ 141, 150 (CCPA 1968); *In re Edwards* 128 USPQ 387 (CCPA 1961); *Stalego v. Heymes* 120 USPQ 473, 478 (CCPA 1959); *Ex parte Hart* 117 USPQ 193 (PO BdPatApp 1957); *In re Freeman* 44 USPQ 116 (CCPA 1940); *In re Sweeney* 72 USPQ 501 (CCPA 1947).

In addition, it would have been obvious to use different draining pipes so that the etching solution is capable of being regenerated and reused, which saves time and money, rather than being mixed with the cleaning solution.

As to claim 6, Yates does not disclose the gas used for purging. However, Yates does teach that nitrogen is a useful gas for filling vessels because it is inert to both the semiconductor structure and the vessel (col.5, lines 6-16). This in turn would increase the final yield by reducing contamination of the final product. It would have been obvious to one with ordinary skill in the art to use nitrogen in the method of Yates because Yates teaches that it is inert to the object and to the vessel, which reduces contamination.

As to claim 7, Yates discloses to use HF, not oxalic acid. However, oxalic acid is a well known oxidizing agent. It would have been obvious to one with ordinary skill in the art to use oxalic acid as a treatment liquid in the method of Yates because it is a conventional treatment liquid for semiconductor structures.

As to claim 8, Yates discloses deionized water (col.11, lines 33-34).

As to claim 9, Yates discloses to drain by using gravity (col.10, line 13), not by using a pump. However, it would have been obvious to one with ordinary skill in the art to use a pump to enhance the step of forcing out the etching solution because pumps are conventional to drain liquids. Further, apparatus limitations, unless they affect the process in a manipulative sense, may have little weight in process claims. *In re Tarczy-Hornoch* 158 USPQ 141, 150 (CCPA 1968); *In re Edwards* 128 USPQ 387 (CCPA 1961); *Stalego v. Heymes* 120 USPQ 473, 478 (CCPA 1959); *Ex parte Hart* 117 USPQ 193 (PO BdPatApp 1957); *In re Freeman* 44 USPQ 116 (CCPA 1940); *In re Sweeney* 72 USPQ 501 CCPA 1947).

As to claims 10-11, Yates discloses drying with IPA (col.12, lines 1-24).

Response to Amendment

The objection to the specification is withdrawn since the word “alone” was deleted from the claim.

The 102 and 103 rejections over Yates is withdrawn because Yates does not disclose draining from an upper portion of the vessel.

The claims are now rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yates (US 6,350,322 B1) and Sadamori (JP 03-296218 A).

Claims 4-11 are also rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 1765

Response to Arguments

The drawings filed 12/04/00 are acceptable.


Applicant's arguments filed 1/25/05 with respect to claims 4-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 571-272-1458. The examiner can normally be reached on Mon-Fri until 2:30 pm (Wed until 11:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Anita K Alanko
Primary Examiner
Art Unit 1765